



## A Closer Look at GDP: We're Doing Better than We Think

By W. Michael Cox and Richard Alm

We love our smartphones—nine of 10 Americans keep theirs within arm's length at all times. Small enough to fit in a pocket or purse and linked to the world by the Internet, these clever devices are light years beyond the mobile telephones that became commonplace just a few decades ago.

Today's smartphones still make calls, but they also replace dozens of gadgets consumers once bought separately—clocks and watches, calculators, still and video cameras, answering machines, address books, tape recorders, iPods and other portable music players, small flashlights, maps, GPS devices and more. More than 6.5 million apps perform tasks that a decade or so ago required their own devices, such as fax machines, metronomes, levels and stud finders.

As Americans rushed to buy the new iPhone X in recent months, each transaction added about \$750 to GDP for the hardware, plus the monthly bill for cell service. The cost of the clocks, calculators, cameras and other devices displaced by each smartphone could easily run to \$5,000 or more—a loss in GDP accounting.

More than 77 percent of American adults own a smartphone, and most use them all the time. We're better off—by quite a bit. Yet, GDP isn't fully capturing the gains in our

national well-being because consumers are getting more value for less money.

The smartphone highlights the digital age's growing gap between what things are worth to us and what they cost us. This leads to a second gap between GDP growth figures, released quarterly and annually, and the economy's real

progress. Bottom line: *The economy may be doing better than what we've seen in the measured GDP statistics.*

Those words closed the previous issue of *The CastleView Outlook* (First Quarter 2018), which asked whether the U.S. economy could break out of a decade-long growth slump. The data isn't encouraging. Trends in key factors determining traditional GDP simply don't support a return to the 3 percent to 4 percent average annual growth of 1948-2007. Instead, the economy figures to poke along at 1.5 percent for another 10 years.

GDP gets a lot of attention. It guides investors allocating their portfolios and policy-makers trying to steer the economy. It influences corporate plans for capital spending and hiring and households' decisions on saving and consumption. An increasingly flawed GDP, which makes a vibrant economy appear dull, might even discourage the very activities that promote growth.

After a decade or so of slow GDP growth, polls tell us Americans, particularly the young, are losing faith in capitalism. Eking our way forward for another decade will likely feed doubts about whether capitalism, the foundation of our wealth, can continue to deliver. So it's important to understand why traditional GDP isn't fully measuring the economy's progress in the 21st Century.



**SERVICES ASCENDANT**

The United States emerged as the world's pre-eminent economic power without a single, headline-grabbing measure of the country's total output of goods and services. To understand the Great Depression of the 1930s, Simon Kuznets and his colleagues at the National Bureau of Economic Research and Commerce Department began to develop the concept of national income, the predecessor to today's GDP.

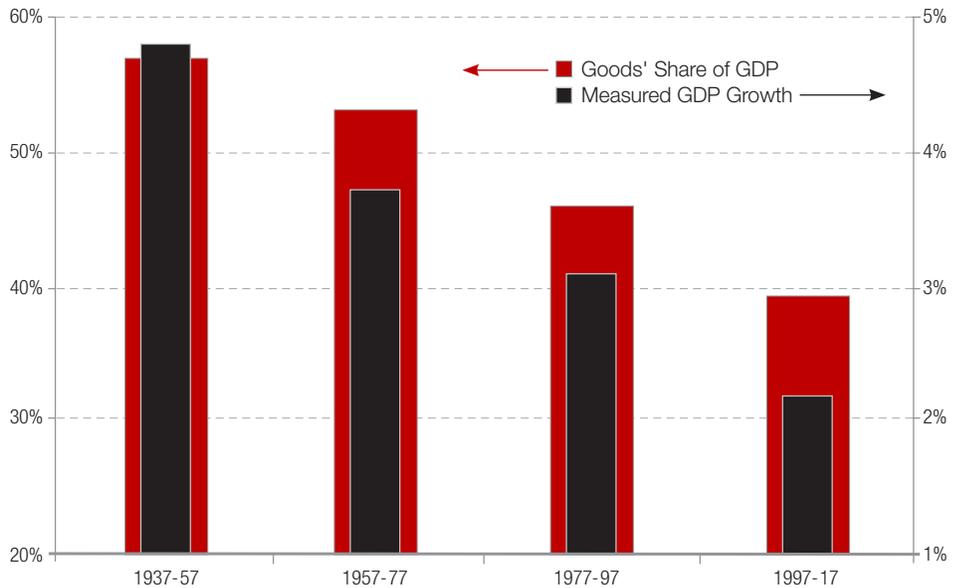
America was then nearing the height of its industrial might, so statisticians focused on the output of factories and farms. Once market prices and output quantities were known, valuing each year's production of steel, automobiles, wheat and thousands of other goods was a simple matter of algebra.

A dramatic transformation swept over the U.S. economy after World War II, with goods production falling from 62 percent of GDP in 1948 to 38 percent today. It's no coincidence that measured GDP growth declined as goods' share of the economy fell with each passing decade (*see chart above*).

U.S. factories aren't producing less than they used to—in fact, industrial output hit an all-time high in 2017, doing it with far fewer workers, thanks to huge increases in output per worker. In addition to the productivity gains, the often-misunderstood manufacturing “decline” actually reflects a monumental surge in services production, which now accounts for the same share of the economy that goods did in 1948.

The shift from goods to services reflects consumer preferences in a society growing richer. When it comes to GDP, services are different from goods because they involve knowledge and information, the value of which is highly subjective. They're intangible—ideas and bits of computer code. They're often non-rival—i.e., many people can consume them at the same time. They're highly varied, even within categories, and bought at a wide range of prices.

Statisticians try their best, but GDP doesn't value services as precisely as goods. The task has become even more complex in recent decades because

**Measured GDP Growth Falls as Economy Shifts from Goods to Services**


of breathtaking progress in technology for processing, transmitting and storing information. Greater capacity went hand-in-hand with lower costs.

Great leaps in chip design have given today's computers almost 2.6 million times more processing power, measured in megahertz, than the machines of the mid-1970s (*see chart next page*). Since the Internet came into everyday life in the 1990s, the megabytes of data that can move in one second increased by a factor of 650,000. When it comes to kilobytes of conventional DRAM storage, a dollar will buy 200 million times what it could in the early 1970s. More recently, storage took another great leap with cloud computing; its capacity in exabytes is up 64-fold in just the past 13 years.

This article began by celebrating smartphones—well, none would even exist without the digital economy's epochal advances in processing power, transmission speed and storage capacity. Most important for the GDP conundrum, these information technologies set off a still-evolving revolution in the way the economy delivers services—from retailing to entertainment.

**MAKING THINGS WORTH MORE**

As digital technologies matured, they generated a string of market-fracturing

innovations that widened the gap between well-being and measured GDP. On one end, they've increased many products' worth—what we would pay for them. On the other, they've reduced products' costs—what we have to pay.

How do companies increase the worth of what they sell? The trick—easier said than done—is to give consumers more of what they want, even if prospective buyers don't exactly know what that is. It might involve improving performance or introducing new features—a process mastered by Apple. In today's busy world, consumers are pressed for time, so added convenience is almost always a blessing. Expanding choice and variety make it more likely people will find just what they want.

Take Amazon. It rose to become one of America's biggest companies by offering consumers choice, variety and convenience. With a few clicks, Amazon shoppers go online and navigate a huge virtual mall with products from all over the world. Chances are they'll find the right stuff. It's promptly delivered right to their doors. With millions of transactions a day, Amazon saves consumers a ton of time and trouble—that's one reason it's become a juggernaut in the retail marketplace.

Shopping the old way was a time-consuming and costly chore, involving driving to the mall, parking in a crowded

lot and wandering from one store to the next to find what you wanted, followed by checkout lines, returning to the car and driving home. And if these stores didn't have the preferred model, style, color or size—it was on to the next mall.

Services that make shopping easier are worth a lot, yet customers pay very little for the added choice and convenience. One driver following an optimally designed route to deliver hundreds of packages a day is more efficient than hundreds of individuals driving around town with their shopping lists.

Spurred by Amazon's success, companies are rushing to offer services that make everyday life easier. Grocery stores now deliver within hours. Other companies ship the ingredients for home-cooked meals. A family that doesn't want to cook can, with a few taps on an iPhone, get a driver to pick up a takeout order.

After dinner, Netflix and other streaming services let families order up an evening of entertainment without leaving the couch.

GDP duly records the sale of a monthly Netflix subscription for as little as \$7.99. That pittance gives the family access to 10,000 shows and the instant gratification of watching the one they want at any time. Surely, it's worth a whole lot more, compared with the old way of driving to the video store.

**FREE OR NEARLY FREE**

Most consumers would be willing to pay more for products that are worth more to them. In today's economy, however, they often don't have to because digital technologies have given rise to industries with high fixed costs and low marginal costs.

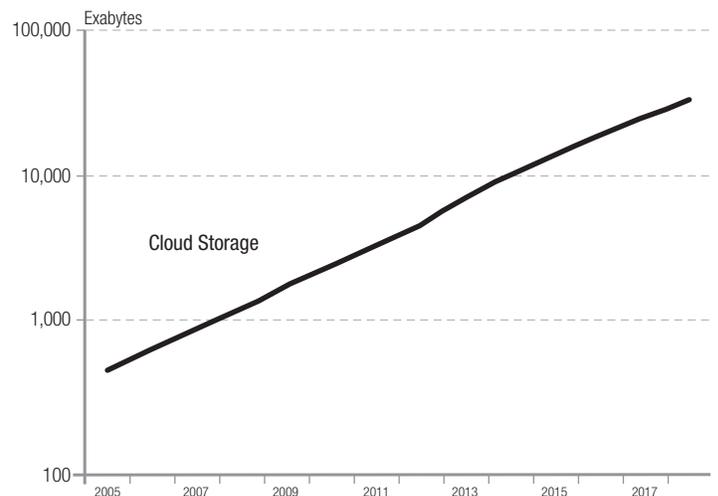
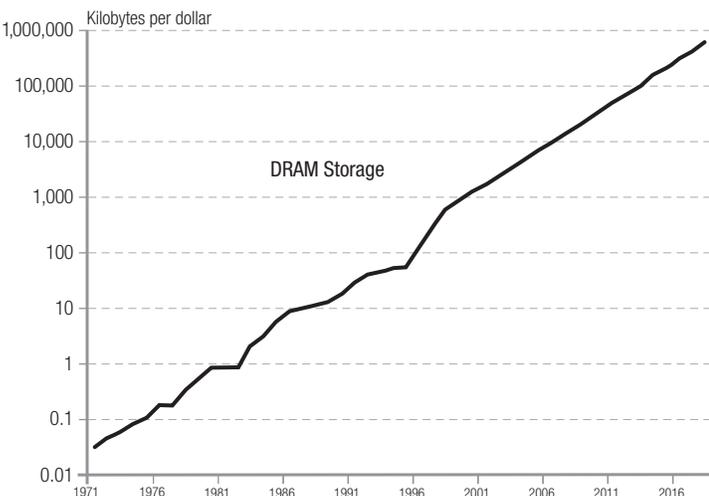
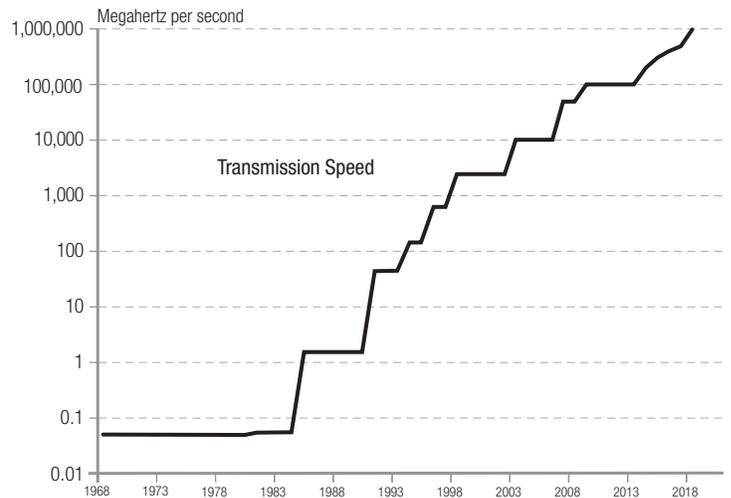
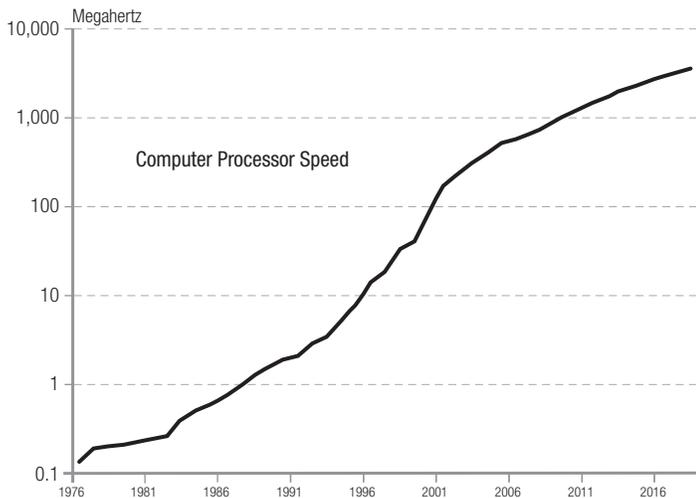
The combination lowers average production costs as companies expand.

Setting up a network enterprise requires huge upfront investments in equipment and software design. Once up and running, however, new customers can be added at negligible cost, their spending offsetting the high fixed costs and allowing firms to charge customers less.

This cost structure changes everything. Most important, the path to higher profit lies in getting bigger and bigger. Industries become highly concentrated, with a handful of big players focused on innovation and low prices to win business. The consumer benefits: Many digital services are free or nearly free.

Thirty years ago, a do-it-yourselfer who wanted to avoid the expense of calling a repairman might buy a \$25 home-repair manual to guide his efforts. Today, the homeowner can use Google to find free YouTube videos that give step-by-step instructions on how to fix just about

**Onward and Upward: Power, Speed and Storage Capacity Reduce the Cost of Information**



anything in the house.

How-to videos are just a start. E-mail service is available at no cost. Smartphones make long-distance calls as free as local ones. Google doesn't charge a cent for putting a world of news, information and entertainment at our fingertips.

In the digital economy, what's not free is often cheaper. Uber charges less for a typical ride in 20 of 21 cities. A FaceTime connection may provide a cheap alternative to travel for staying in touch with family and conducting business. Internet makes it much easier to find a bargain. Airbnb offers 5 million places to stay in homes in 81,000 cities, many charging less than nearby hotels. By making it easy for sellers to find buyers, eBay created a vast market for used goods.

In the tradition of Milton Friedman, economists insist there are no free lunches. Somebody always foots the bill—advertisers, data clients, somebody. Accessing the bargains available in the digital age requires us to buy computers and smartphones and pay for Internet access. All true, but none of it negates the point—digital technology is driving down the cost of many of today's

goods and services.

An economy of greater worth and lower costs puts the slowdown of measured GDP growth in a different perspective. It tells us we're doing better than we think. By how much? It's impossible to say, but the size and growth of the digital economy suggests that the gap between well-being and GDP is large and getting larger.



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**CASTLEVIEW MARKET COMMENTARY**

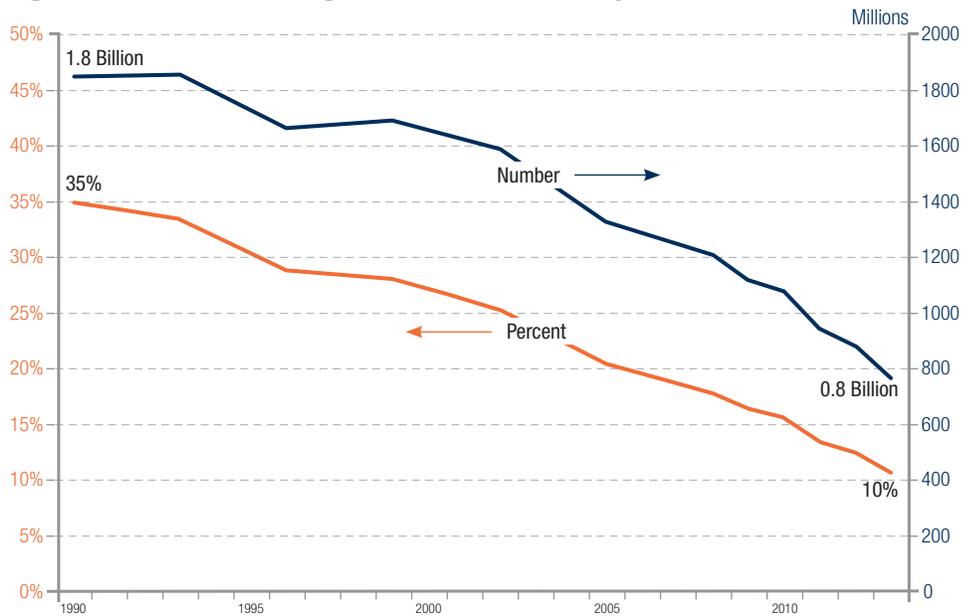
**Three Decades of Global Progress in Reducing Extreme Poverty**

One way to quantify economic progress is to look at the poorest of the poor—those struggling to survive on \$2 a day or less.

According to the World Bank, the desperately poor totaled 1.8 billion in 1990, or 35 percent of the world's population. Most lived in Africa and Asia. Today, the number is down to 800 million, or 10 percent of the population.

How did a billion people rise out of the worst kind of poverty? The story is different in each country, but the unifying theme has been greater economic freedom. Countries like China and India adopted market reforms, leading to growth spurts responsible for improving the lot of all segments of society.

If these trends continue, extreme poverty may be virtually eliminated in the next decade or so, confined to a few countries that maintain state-dominated policies.



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